# ASSIGNMENT 3

Textbook Assignment: "Chassis Systems," "Electrical and Hydraulic Systems,"and "Rules of the Road," pages 3-24 through 5-6.

Learning Objective: Recognize the principles and components of air, air–over–hydraulic, and vacuum brake systems.

3-1. An air brake system uses compressed air to apply the brakes.

1. True
2. False

3-2. In an air brake system, what component pumps air into the storage tanks?

1. The governor
2. The evaporator
3. The air compressor
4. The master cylinder pump

3-3. At what pounds per square inch (psi) of air pressure does a governor stop the compressor from pumping air?

1. 30
2. 60
3. 90
4. 120

3-4. Compressed air usually contains water and compressor oil.

1. True
2. False

3-5. Which of the following components of an air brake system helps reduce the risk of ice in air brake valves?

1. Safety valve
2. Treadle valve
3. Alcohol evaporator
4. Limiting quick–release valve

3-6. Which of the following components of an air brake system protects the tank and the rest of the system from too much air pressure?

1. The safety valve
2. The alcohol evaporator
3. The drain cock
4. The slack adjuster

3-7. When the brake pedal is engaged, air from the air tank flows through what component before flowing through the brake lines connected to the brake chambers?

1. Double–check valve
2. Brake pedal valve
3. Limiting quick-release valve
4. Hand brake valve

3-8. Pressing and releasing the brake pedal unnecessarily may release air out faster from the air tank than the compressor can replace it.

1. True
2. False

3-9. A low air warning device should cut on before the pressure in the air tank(s) drops lower than what pressure?

1. 120 psi
2. 90 psi
3. 60 psi
4. 30 psi

3–10. On a tractor-trailer equipped with air brakes, which of the following components provides the operator control of the trailing load at all times?

1. Master cylinder valve
2. Hand brake valve
3. Trailer protection valve
4. Double-check valve

3-11. Because of the size of the air piston in an air-over–hydraulic brake system, the air pressure is a much greater pressure than the hydraulic pressure that is admitted to the air cylinder.

1. True
2. False

3-12. In a vacuum brake system, what force acts on the rear side of the piston to exert a powerful pull on the rod attached to the piston?

1. Compressed air
2. Mechanical pressure
3. Vacuum
4. Atmospheric pressure

3-13. What type of vacuum braking system contains within one unit, a hydraulically actuated control valve, a vacuum power cylinder, and a hydraulic slave cylinder?

1. Hydrovac
2. air-hydraulic unit
3. electric vacuum unit
4. air pack

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Learning Objective: Recognize the principles and components of electrical systems used in automotive and construction equipment.

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3-14. Which of the following components is NOT a basic component of an automotive and construction equipment electrical system?

1. A storage battery
2. A charging system
3. A starting circuit
4. An electrostat

3-15. Which of the following components is the heart of the charging circuit?

1. The storage battery
2. The starting circuit
3. The lighting system
4. The gauges

3–16. Battery current is produced by a chemical reaction between the active materials of the plates and what type of acid?

1. Bromic
2. Floric
3. Sulfuric
4. Phosphoric

3-17. You can thoroughly clean a battery by using a stiff brush and what kind of solution?

1. Water and baking soda
2. Water and soap
3. Water and detergent
4. Water and vinegar

3-18. The cell elements of a battery contain two types of lead plates, known as positive and negative.

1. True
2. False

3–19. In what units is the capacity of a battery measured?

1. Cold current amps
2. Circuit cranking voltage
3. Cold cranking amps
4. Continuous cranking voltage

3–20. The charging system recharges the battery and performs what other function?

1. Stores charged amps
2. Generates current during operation
3. Stores charged voltage
4. All of the above

3-21. Dc and ac are the two types of charging systems used on automotive and construction equipment.

1. True
2. False

3-22. What component of the charging system supplies the electrical power and rectifies its current mechanically by using commutator bars and brushes?

1. The generator
2. The alternator
3. The regulator
4. The coil

3-23. Most alternators supply a low current output at low-engine speed.

1. True
2. False

3-24. Which of the following stages is NOT an operating stage of a charging system?

1. The battery supplies all load current during starting
2. The battery supports the generator supply current during peak operations
3. The generator supplies all current and recharges the battery
4. The battery supplies all current for peak operations

3-25. The battery supports the generator or alternator during peak operations.

1. True
2. False

3-26. Which of the following starting circuits is NOT used to increase either the voltage or amperage from a set of batteries?

1. Parallel system
2. Series system
3. Series-parallel system
4. Double-series system

3-27. Hooking up jumper cables from a 24-volt system to a heavy-duty 12–volt system can cause severe battery damage, starter destruction, or even an explosion.

1. True
2. False

Learning Objective: Recognize the principles and components of the lighting system.

3-28. Which of the following is NOT a component of the lighting system?

1. Lamps and bulbs
2. Clearance lights
3. Fuses
4. Stators

3-29. Which of the following personnel is responsible for replacing bad bulbs on equipment?

1. The dispatcher
2. The yard boss
3. The operator
4. The company clerk

3-30. Clearance lights detail which of the following areas of a vehicle?

1. The maximum width only
2. The maximum height only
3. The maximum length only
4. The maximum height and length

3-31. What classification of lights outline the height of a vehicle?

1. Clearance
2. Side marker
3. Identification
4. Taillights

3–32. As viewed from the side, what classification of lights indicate the full-over-all length of a vehicle?

1. Clearance
2. Side marker
3. Identification
4. Taillight

3-33. Which of the following items are used as an additional safety precaution in case lights burn out or are broken?

1. Auxiliary light
2. Spotlight
3. Backup light
4. Reflectors

3-34. A brake light is usually combined with the taillight using what type of bulb?

1. Single-contact, double–filament
2. Double-contact, double–filament
3. Double-contact, florence filled
4. Single-contact, single–filament

3–35. Brakes lights are a safety-required item and must be operational at all times.

1. True
2. False

3–36. Which of the following lights must turn off automatically when a vehicle is moving forward?

1. Brake
2. Parking
3. Backup
4. Side marker

3-37. Which of the following components is the weakest point in an automotive electrical circuit?

1. The bulb
2. The fuse
3. The wiring
4. The electrical connections

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Learning Objective: Recognize the principles and components of gauges.

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3-38. When the temperature reading on a water temperature gauge starts to rise, you should stop and determine the reason.

1. True
2. False

3-39. Cold water should be added to an overheated engine when it is NOT running.

1. True
2. False

3–40. After an engine is started, what is the rule of thumb for the oil pressure gauge?

1. It should indicate 10 pounds of pressure in 30 seconds
2. It should indicate 30 pounds of pressure in 30 seconds
3. It should indicate 60 pounds of pressure in 30 seconds
4. It should indicate 90 pounds of pressure in 90 seconds

3-41. A low air pressure warning light or buzzer should come on when the air pressure drops below which of the following pressures?

1. 60 psi
2. 90 psi
3. 120 psi
4. 150 psi

3-42. What action should you take if the hydraulic fluid level is normal, but the hydraulic fluid temperature gauge indicates the fluid has exceeded the recommended operating temperature range?

1. Continue to operate at a slow speed
2. Shut down the engine to allow the hydraulic fluid to cool
3. Idle the engine to allow the hydraulic fluid to cool
4. Continue to operate running the engine at full speed

3–43. When operating a piece of equipment, what action should you take if the fuel gauge does NOT indicate any depletion of fuel?

1. Visually check the fuel level from time to time
2. Assume the fuel tank is full
3. Ignore the gauge
4. Park the equipment and notify the mechanic field crew

Learning Objective: Recognize the principles and components of hydraulic systems.

3-44. Which of the following is NOT a component of a hydraulic system?

1. A reservoir
2. A pump
3. Control valves
4. A thermostat

3-45. Which of the following components is the fluid storehouse for the hydraulic system?

1. Hydraulic cylinder
2. Accumulator
3. Reservoir
4. Fluid box

3-46. The baffle plate in the hydraulic fluid reservoir does NOT allow which of the following conditions to occur?

1. The dissipation of air bubbles
2. The settling of contaminants
3. The cooling of the return fluid
4. An excessive formation of air bubbles

3–47. Which of the following components creates the flow of fluid within the hydraulic system?

1. The hydraulic cylinder
2. The control valve
3. The hydraulic pump
4. The strainer

3–48. Hydraulic controls should be operated smoothly to eliminate any jerking motion that causes rapid wear of mechanical parts?

1. True
2. False

3-49. The force created by a hydraulic cylinder is determined by the pressure of the fluid and what other system?

1. The size of the hydraulic hoses
2. The speed of the engine
3. The area of the piston contacted by the fluid
4. The skillful use of control valves

3–50. What type of hydraulic cylinder exerts force in only one direction?

1. Single-acting
2. Double-acting
3. Triple-acting
4. None of the above

3–51. Foreign material exposed on hydraulic rams can damage seals and wiper seals.

1. True
2. False

3-52. When performing pre- and post-operational inspections, you should inspect hydraulic hoses for which of the following conditions?

1. Cracking only
2. Rubbing and cracking only
3. Twisting and rubbing only
4. Twisting, rubbing, and cracking

3-53. Which of the following components performs the work of two shutoff valves and a tube coupler?

1. Pressure relief line
2. Relief valve
3. Quick-disconnect coupler
4. Oil strainer

3-54. What component installed in a hydraulic system is used to absorb shock?

1. Shock absorber
2. Accumulator
3. Piston seal
4. Control valve

3-55. Which of the following components supplies power to a hydraulic motor?

1. Relief valve
2. Accumulator
3. Pump
4. Reservoir

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Learning Objective: Recognize the principles of defensive driving.

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3-56. Which of the following are common traits displayed by discourteous drivers?

1. Impatience
2. Road hogging
3. Excessive speed
4. All of the above

3–57. As a professional Equipment Operator (EO), you should demonstrate which of the following types of performance when behind the wheel?

1. Aggressive
2. Businesslike
3. Crude
4. Insulting

3-58. Which of the following precautions should you take to avoid rear–ending someone?

1. Have enough room to stop
2. Keep enough distance between you and the vehicle in front of you at stops to see taillights and brake lights
3. Watch vehicles that are two and three vehicles ahead of you
4. All of the above

3-59. As an operator, you are responsible for adjusting your speed to weather and road conditions.

1. True
2. False

3-60. Which of the following items should you NOT do in a vehicle skid?

1. Steer in the direction of the skid
2. Apply light pressure on the accelerator
3. Apply the brakes
4. All of the above

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Learning Objective: Recognize the principles of driving under normal conditions.

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3-61. Which of the following actions should an operator perform to make a safe turn with a vehicle?

1. Move into the correct turning lane prior to approaching the intersection
2. Signal at least 100 feet before turning
3. Finish the turn in the proper lane
4. All of the above

3–62. The slower the speed of the vehicle ahead, the more road space and time is required to overtake and pass the vehicle.

1. True
2. False

3-63. Passing is permitted if the center line of the road is solid on your side.

1. True
2. False

3–64. When parking in the parking lane on a street. you should park at a maximum of what distance from the curb?

1. 1 foot
2. 2 feet
3. 3 feet
4. 4 feet

3-65. Which of the following personnel are responsible for a backing mishap?

1. The operation chief
2. The transportation supervisor
3. The operator
4. The yard boss

3-66. Which of the following techniques should an operator use to avoid a backing mishap?

1. Blow the horn at least twice before backing
2. Survey the area behind the vehicle before backing
3. Use a backup guide
4. All of the above

3-67. A majority of backing mishaps could have been avoided if operators had used backup guides.

1. True
2. False

3-68. What are the basic parts of an entrance to an expressway?

1. The entrance ramp
2. The acceleration lane
3. The merging lane
4. All of the above

3-69. At what location should you slow down when departing an expressway?

1. Merging lane
2. Deceleration lane
3. Exit lane
4. All of the above

3-70. During a periodic stop, what items should you inspect when giving a vehicle a quick safety inspection?

1. Inspect the conditions of the tires
2. Listen for air leaks
3. Check the load to see if it has shifted
4. All of the above

Learning Objective: Recognize the principles used when driving under hazardous conditions.

3-71. Driving on hard–packed snow is more dangerous than driving on fresh snow.

1. True
2. False

3-72. Which of the following conditions is affected when driving on snow and ice?

1. Visibility
2. Stopping distance
3. Maneuverability
4. All of the above

3-73. You are driving under normal conditions and traveling at 10 miles per hour. Under these conditions, you should allow what number of car lengths of space from the vehicle you are traveling behind?

1. 1
2. 2
3. 3
4. 4

3-74. Which areas of a roadway freeze and remain frozen longer than regular roadway surfaces?

1. Bridges
2. Overpasses
3. Shady areas
4. All of the above

3-75. What action should an operator take if water has entered the brake drums and wet the linings?

1. Drive very fast and slam on the brakes to dry the lining
2. Drive very fast and gently apply the brakes to dry the linings
3. Drive very slow and gently apply the brakes to dry the linings
4. Drive very slow and slam on the brakes to dry the linings